UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,525	01/22/2002	Vladimir Zabezhinsky	AMCC6000	5983

7590 07/28/2006

Terrance A Meador
INCAPLAW
1050 Rosecrans Street
Suite K
San Diego, CA 92106

EXAMINER	
SHAND, ROBERTA A	
ART UNIT	**PAPER NUMBER**
2616	

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/054,525	Applicant(s) ZABEZHINSKY, VLADIMIR	
	Examiner Roberta A. Shand	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3, 4, 7-11, 13-16, 18-26 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones (U.S. 2002/0097752 A1 in view of Amann (U.S. 6625176 B1).

3. Regarding 1, Jones teaches (fig. 3)a distributed data frame structure for the transmission of data frames over N channels (C1 – C17), each data frame being represented by L bytes, said distributed data frame structure comprising: N sub frame structures (C1-C18), each corresponding to one of said channels (C1-C17); the L bytes representing each data frame; and a frame alignment signal comprising a pattern of bits (C18).

4. Jones does not rotating deinterleaving teach for each data frame beginning at a subframe structure different from the subframe structure at which the rotation of deinterleaving began for the previous data frame and the frame alignment signal occurring every L bytes in each of said sub frame structures.

5. Amann teaches (fig. 3) rotating deinterleaving for each data frame beginning at a subframe structure different from the sub frame structure at which the rotation of deinterleaving began for the previous data frame and frame alignment signal occurring every L bytes in each of sub frame structures. It would have been obvious to one of ordinary skill in the art to adapt to

Jones's system frame alignment signals every L bytes in each sub frame to acquire frame alignment (col. 3, lines 5-15).

6. Regarding claim 3, Jones teaches (fig. 3) N = 4.

7. Jones nor Amann explicitly teach L = 16,320. However the length of the frame varies in Jones and Amann's system, which incorporates this value.

8. Regarding claim 4, Amann teaches (fig. 3) frame alignment signal (FS) occurs once in each data frame.

9. Regarding claim 7, Jones teaches (fig. 3) a method of formatting a distributed data frame structure comprising: receiving a plurality of data frames (framing words), each composing a plurality of bytes; establishing a plurality of sub frame structures (C1-C17), each corresponding to one of a plurality of different transmission channels (C1-C17).

10. Jones does not teach performing a rotating deinterleaving procedure on said plurality of data frames.

11. Amann teaches (fig. 3) performing a rotating deinterleaving (distributing a frame synchronization signal throughout the frame) procedure on said plurality of data frames. It would have been obvious to one of ordinary skill in the art to adapt to Jones system frame alignment signals every L bytes in each sub frame to acquire frame alignment (col. 3, lines 5-15).

12. Regarding claim 8, Amann teaches (fig. 3) the rotating deinterleaving (distributing a frame synchronization signal throughout the frame) procedure distributes bytes from each of said plurality of data frames among each of said plurality of sub frame structures.

13. Regarding claims 9,10, 18 and 19, Amann teach (fig. 3) each of said plurality of data games includes a frame alignment signal comprising a pattern of bits; distributes said frame alignment signal periodically within each of said plurality of sub frame structures (col. 6, lines 29 – col. 7); and rotating interleaving on the aligned sub frames to recreate the plurality of frames (col. 7).

14. Regarding claim 11. Jones teaches (fig. 3) procedure composes: assigning a first instance of said frame alignment signal to a reference location in a first one of said plurality of sub frame structures to identify a reference position in a first one of said data frames; and assigning a second instance of said frame alignment signal to said reference location in a second one of said plurality of sub frame structures to identify said reference position in a second one of said data frames (paragraphs 42-46).

15. Jones does not teach performing a rotating deinterleaving.

16. Amann teaches (fig. 3) rotating deinterleaving (distributing a frame synchronization signal throughout the frame). It would have been obvious to one of ordinary skill in the art to adapt to Jones system frame alignment signals every L bytes in each sub frame to acquire frame alignment (col. 3, lines 5-15).

17. Regarding claim 13, Jones teaches (fig. 3) a data communication apparatus comprising: an input node configured to obtain a plurality of data frames (framing words), each comprising a plurality of bytes; and reformatting the data frames into a plurality of sub frame structures (C1-C17), each corresponding to one of a plurality of different transmission channels (paragraphs 42-46)..

18. Jones does not teach performing a rotating deinterleaving procedure on said plurality of data frames.

19. Amann teaches (fig. 3) rotating deinterleaving (distributing a frame synchronization signal throughout the frame). It would have been obvious to one of ordinary skill in the art to adapt to Jones system frame alignment signals every L bytes in each sub frame to acquire frame alignment (col. 3, lines 5-15).

20. Regarding claim 14, a plurality of serializers being configured to generate serial data representing one of said plurality of sub frame structures (a serialize is inherent in Jones system since serial data is transmitted on the channels fig. 3).

21. Regarding claim 15. Jones teaches (fig. 1 and paragraph 50) a framer configured to align said plurality of data frames (Jones teaches a de-skewing process which aligns the original framing word).

22. Regarding claims 16 and 22, a data communication method comprising: receiving a plurality of data frames at a first data rate, each of said plurality of data frames comprising a

plurality of bytes; performing a procedure to distribute data from said plurality of data frames into a plurality of sub frame structures (paragraphs 42-46); and transmitting each of said plurality of sub frame structures over one of a plurality of channels (C1-C17), each of said plurality of sub frame structures being transmitted at a second data rate less than said first data rate.

23. Jones does not teach performing a rotating deinterleaving procedure on said plurality of data frames.

24. Amann teaches (fig. 3) rotating deinterleaving (distributing a frame synchronization signal throughout the frame). It would have been obvious to one of ordinary skill in the art to adapt to Jones system frame alignment signals every L bytes in each sub frame to acquire frame alignment (col. 3, lines 5-15).

25. Regarding claims 20, 25 and 29, Jones teaches (fig. 1 and paragraph 50) de-skewing the aligned sub frame structures.

26. Regarding claim 21, Amann teaches (col. 7) the rotating interleaving procedure reverses the effect of said rotating deinterleaving procedure.

27. Regarding claim 23. Jones teaches (fig. 1) a data communication apparatus comprising: at least one input node configured to obtain a plurality of sub frame structures from a plurality of channels (fig. 3, C1-C17), each of said plurality of sub frame structures comprising a plurality of bytes (paragraphs 42-46); and a configured to distribute data from said plurality of sub frame structures into a data frame (paragraph 50).

28. Jones does not teach performing a rotating interleaving procedure on said plurality of data frames.

29. Amann teaches (col. 7) performing a rotating interleaving procedure on said plurality of data frames. It would have been obvious to one of ordinary skill in the art to adapt this to Jones' system to recover the original frame.

30. Regarding claims 24 and 28. Jones teaches (fig. 1 and paragraph 50) a plurality of framers configured to frame said plurality of sub frame structures to obtain aligned sub frame structures (Jones teaches a de-skewing process which aligns the original framing word).

31. Regarding claims 26 and 30, Jones teaches a method comprising: receiving, at a first data rate, a plurality of sub frame structures from a plurality of channels (fig. 3, C1-C17), each of said plurality of sub frame structures comprising a plurality of bytes (paragraph 42-46); and performing a procedure to distribute data from said plurality of sub frame structures into a data frame formatted for transmission at a second data rate higher than the first data rate (fig. 1).

32. Jones does not teach performing a rotating interleaving procedure on said plurality of data frames.

33. Amann teaches (col. 7) performing a rotating interleaving procedure on said plurality of data frames. It would have been obvious to one of ordinary skill in the art to adapt this to Jones' system to recover the original frame.

34. Claims 2, 5, 12, 17 and 27, are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Amann and further in view of Agarwal (U.S. 6931009 B1).

35. Regarding claim 2, as mentioned above Jones and Amann teach all of the limitation in claim 1.

36. Jones and Amann do not teach ITU each data frame is formatted in accordance with ITU-T Recommendation G.709W.1331.

37. Agarwal teaches (col. 1) Recommendation ITU-TG.709W. It would have been obvious to one of ordinary skill in the art to adapt this to Jones and Amann's system as it is well known in the art.

38. Regarding claim 5, Agarwal teaches (col. 6, lines 30-46) the number of bytes are deinterleaved into said sub frame structures.

39. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones in view of Amann and further in view of Giorgetta (U.S. 6795451 B1).

40. Regarding claim 6, Jones and Amann do not teach frame alignment signal composes a pattern of three A1 bytes followed by three M bytes.

41. Giorgetta teaches (col. 23, lines 53-64) frame alignment signal composes a pattern of three A1 bytes followed by three M bytes. It would have been obvious to one of ordinary skill in the art to adapt this to Jones and Amann to determine both byte and the frame boundary.

Response to Arguments

42. Applicant's arguments with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberta A Shand whose telephone number is 571-272-3161. The examiner can normally be reached on M-F 9:00am-5:30pm.

2. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

3. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Roberta A Shand
Examiner
Art Unit 2616